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MR. F. G. L. BERTRAM, C.B.E. (*Secretary*).

ADVISORY COMMITTEE ON CIVIL AVIATION.

REPORT ON GOVERNMENT ASSISTANCE FOR THE DEVELOPMENT OF CIVIL AVIATION.

To The Rt. Hon. WINSTON S. CHURCHILL, M.P.,
Secretary of State for Air.

1. *Terms of Reference.*—The terms of reference which we have received on the present occasion are to “consider the essential steps in the national interest which the Government should take to develop Civil Aviation, bearing in mind the need for the utmost economy.”

2. *General Observations.*—We begin by observing that the Air Ministry was established to discharge the functions of the State relating to military and civil aviation and its development. We interpret the above reference as an instruction to make recommendations as to the character and application of those functions in the sphere of civil aviation.

Any consideration of civil aviation must necessarily include reference not only to the aerial transport services which have come into existence since the Armistice and which in the national interest we are bound to regard as a nucleus from which greater development will follow, but also to the aircraft manufacturing industry, the future of which must depend not only on the requirements of the Royal Air Force but also on those of civil air transport. If the industry is restricted to the manufacture of Service machines, its magnitude would be considerably curtailed.

In making these recommendations, therefore, as to the action which may properly be taken by the State to assist the development of a novel means of transport we must consider it not only in the light of its present and potential value as a commercial service, but also in the bearing it may have on an industry whose dimensions would otherwise be governed solely by the needs of one arm of the fighting Services of the Crown. We think it necessary, however, to place on record with the utmost clearness that no action on the part of the State which we should regard as justifiable, nor any development of private enterprise which is yet within sight, can save the industry from great reduction from its war-time magnitude.

The exigencies of war brought about a forced development in the aeroplane for fighting purposes and a corresponding development in the facilities and methods of its manufacture. To-day, one of the main lessons to be learned from the war appears to be the appreciation of the possibilities of aircraft as vital in future warfare and at the same time as a new and promising, although little tried, factor in the fundamental industry of transport and communication.

The inter-action of these factors, together with the limited experience so far obtained in British civil aviation, renders the problem of laying down a satisfactory State policy one of abnormal difficulty. We have not approached the problem from the point of view that what we have to do is to make recommendations simply on the basis that civil aviation and the aircraft industry must be kept alive. Our proposals are based on the implication in the terms of reference that it is in the national interest that the State should play a definite part in encouraging and helping the initial development of a new public service. We are persuaded that, in the long run, development must depend not on Government action, but on the courage and enterprise of the members of the community who are interested. The function of the State is to encourage and assist but not to operate or initiate. A healthy industry can only find a sure foundation in individual faith, adventure and effort. State help must be determined strictly with reference to the importance of the national interests involved.

Applying this criterion of national interest to the sphere of civil aviation, we make the following observations :—

(a) In view of the widespread nature of the British Empire and the undeveloped state of transport in many parts of it, the definite commercial possibilities for transport by air which are offered should be exploited.

(b) The existence of a healthy civil aerial transport industry would tend to ensure the supply of material to the Royal Air Force and to reduce the

cost. Conversely, lack of development of aerial transport would entail a manufacturing industry supported almost exclusively by Government orders for the Royal Air Force.

(c) It is to the interest of the community to speed up communications to other countries and outlying parts of the Empire. It is contended that by the development of civil aviation this object can be attained.

(d) It is of the highest importance that British prestige in air development won during the war should not be lost.

3. *Policy with regard to British Civil Aviation, and Assistance already given.*—We proceed to note that a definite policy in regard to civil aviation has already been laid down and acted upon in this country by the Government, and we would deprecate the tendency to belittle British effort; both private and public since the Armistice, or to display impatience with the slow rate of progress. The hardships and difficulties in the way of the rapid development of civil aviation are great and on reviewing the situation we are impressed by the wide scope of the action which has already been taken and the progress which has resulted.

A brief statement of the steps taken by the Air Ministry to carry out the recommendations of policy which have been made from time to time will be found as an Appendix to this Report, from which it will be seen how far the Government has already assisted in laying the foundation of British civil aviation.

Normally the amount of indirect State action and assistance thus described might be held to be sufficient and, when we considered the problem of "Imperial Air Routes," we concluded that we should not be justified in making any recommendations beyond those contained in our Report.* Our present inquiry has confirmed us in the conviction that the grant of such indirect assistance is essential, and it has given us satisfaction to learn that this policy has been accepted by the Government and is in course of execution.

The problem which we have had to consider on the present occasion has been whether the grounds of national interest are sufficiently strong to justify us in going further and passing from the sphere of indirect to the sphere of direct State assistance.

4. *Previous Report—Agreement with considerations contained therein.*—In considering the possible development of Imperial Air Routes, we concluded that in present conditions the principle must be adopted of concentration on one route, viz., Egypt to India. Reviewing the situation nearer home, we are again impressed by the fact that what is still required is not dissipation but concentration of effort on a very few routes with the object of collecting a body of experience in the operation of transport services on which the wider progress which we foresee can be based.

The British Isles, owing to climatic conditions and their relatively small area, are not suitable for an early development of civil aviation. In civilised and well-developed countries where an air service has to compete with express trains running at night between main centres of population, air transport can only be established with success if it can offer an equally reliable and substantially faster service. The air possesses only one asset, that of speed, but this advantage cannot be fully utilised until much greater experience of night flying has been obtained and the necessary ground organisation to make this practical and safe has been more fully developed.

We are therefore of opinion that more suitable fields for private enterprise and for the exploitation of British air transport services exist in the Dominions and Colonies and between Great Britain and foreign countries, and although we have carefully considered the advisability of recommending State assistance for long-distance routes within the British Isles, particularly in connection with the transport of mails, we have arrived at the conclusion that such air services would not in present conditions provide advantages so far superior to methods of transport already in existence as to warrant their establishment. In accordance with the historical development of new industries, however, it rests with British private enterprise to pioneer the way, to develop types of machines, and to establish experimental and demonstration routes, in order that the experience so gained may serve as a guide for the development of British civil aviation further afield. There can be no doubt that British aircraft constructors and designers can interest and attract potential customers and capitalists not only in Europe, but also in the

* Cmd. 449. "Report on Imperial Air Routes."

Dominions, Colonies, and foreign countries more successfully and easily by showing demonstration services actually in operation and running regularly between London and other European capitals than by any other form of advertisement.

It must be recognised, however, that the present reduction in aircraft manufacture automatically lessens the rate of progress in the development of design and the advantages attendant thereon, as designing staffs can only be kept in being to the extent that the demand for machines warrants. This demand should come from the Royal Air Force for machines of a military type and from the Transport Companies to a large extent for those of a commercial type. The R.A.F., however, are left with a large fleet of aeroplanes as the surplus of war and can, at present, place orders only for experimental machines, while the placing of orders for civil machines by the Government cannot be justified. The demand and the specification of requirements must in every case emanate from the user, whether military or civil.

There is good reason to fear that unless a sound nucleus of designing staff is retained by the Aircraft Constructors, this country will necessarily lose the pre-eminent position in design which it has occupied, and will soon lag behind better supported foreign competitors.

We cannot ignore the progress of other nations in aircraft design and this is a factor to be borne in mind in considering the extent to which the Government should place orders for experimental machines.

We are therefore of the opinion that the Air Ministry should make every effort to maintain the designing staffs at an efficient level, by placing as many orders as possible for experimental military machines, coupled with every possible assistance to encourage firms to develop aeronautical research.

5. *Evidence with regard to existing Transport Services.*—With regard to the services already in existence between London and Paris and London and Brussels, we obtained evidence of the greatest value from Major-General Sir S. Brancker, K.C.B., of the Aircraft Transport and Travel Co., and from Mr. Handley Page; while Sir Evelyn Murray, K.C.B., Secretary of the General Post Office, gave much interesting information on the question of the carriage of mails by air. The evidence given by Sir S. Brancker and Mr. Handley Page afforded a complete endorsement of the views of the Committee on the value of demonstration services, and we desire to place on record our conviction that British civil aviation owes a real debt of gratitude to Mr. Holt Thomas and Mr. Handley Page for the pioneer efforts made by their companies in this new field of activity.

From the evidence given, several important deductions may be drawn :—

(i) Reliability and regularity of service involve the use of relatively high-speed machines, which in turn considerably increases the total cost of operation.

(ii) A less regular service, that is one which may not operate in bad weather, equipped with machines of a relatively low speed, can be maintained at running costs which appear to be even now commercially sound, provided that a guaranteed cargo of either mails, passengers or goods can be secured.

(iii) The service to Paris run by the Aircraft Transport and Travel Co. has been very reliable; and a comparison with the figures of the first mail service carried by rail, in the early days of railway development, would, it is thought, show to the advantage of the air mail service to Paris.

(iv) One of the difficulties experienced by the services has been that of regularly filling a substantial percentage of the useful space. Passengers and goods come forward spasmodically, and there is not yet apparently any deep-seated confidence on the part of the public in the reliability of these services, which they have not yet learned to value.

(v) The mail enterprise between London and Paris, which was of a provisional character, has proved to be a failure, but the failure does not reflect in any degree on the flying side of the service. It would appear rather to be due to three causes :—

(a) Insufficient advertisement.

(b) The inconvenience experienced by the public in being unable to post (air) letters except at certain specified Post Offices in London.

(c) The prohibitive cost of 2s. 6d. per letter.

There does not appear to be any great demand for a daylight exchange of letters between London and Paris, though it is a question how far this apparent absence of demand is due to the causes enumerated above.

(vi) Experience has shown the necessity of special designs for commercial machines and engines.

It is important to emphasise that the existing services have been carried out to a very large extent with surplus war machines acquired at a low valuation, and the replacement of these machines by others of new design, specially built to suit commercial conditions, will involve a further large increase in capital outlay and a consequent increase in the cost of depreciation, thus adding to the total cost of operation.

6. *Consideration of further temporary State Assistance.*—We have carefully considered a memorandum prepared by the Controller-General of Civil Aviation containing recommendations for the assistance of civil aviation in different directions, and have also had before us various suggestions from other sources; but, bearing in mind the need for exercising the utmost economy in framing our proposals, we have found the arguments insufficient to justify us in putting forward more extensive recommendations than those contained in this Report.

From our review of the general situation and from the evidence given before us, we have come definitely to the conclusion that, in spite of the indirect assistance so far recommended and in course of being provided, the development of civil aviation so far attained may yet stop short, and that the operational experience which is essential to that development may cease. We think that national interests demand that such a risk should be avoided, and we have accordingly been led to consider whether the provision of a measure of direct assistance cannot be justified.

We record at the outset that we should in no case contemplate the continuation of such assistance as part of the permanent policy of the State. We have dealt with it solely as a matter for consideration during the present critical years when the fortunes of British civil aviation hang in the balance.

It may be held that there is no case for direct State aid at all, and that the proper course is to leave civil aviation to find its own way with the indirect assistance already recommended by the Committee and approved by the Government.

We have come to the conclusion that direct State aid is justified for reasons which have already been in part indicated, and also for the following reasons.

The artificial impetus given by the war to the aircraft industry and the consequent influence on private enterprise lay a responsibility on the State to continue its support in some degree as a temporary measure until sufficient experience has been gained either to place civil aviation in a sound position or to establish that it is not a commercial possibility, or is of small practical value.

Further, there arise considerations of national prestige and national defence which have in the past been held to be strong enough to justify departure from the traditional British policy of leaving trade and industry to take care of themselves. There is undoubtedly serious risk that the lead in aviation attained by this country during the war may be lost unless further assistance is forthcoming for civil aviation. The failure of civil aviation would result, not only in a loss of British prestige in a new and potentially important sphere of commercial activity, but would also re-act unfavourably on service aviation by depriving it of a reserve of personnel, material and constructional facilities from which to draw in the event of war.

Accordingly, we recommend that the precedents of State aid to which we have alluded be followed in the case of civil aviation for a strictly limited period, and on such conditions as will ensure that, in return for State assistance, private enterprise spares no efforts to place civil aviation on an independent and self-supporting basis. We are persuaded that, whatever State aid be given, final success will depend on the courage, imagination and resource of those engaged in private enterprise and the measure of support given by capital and the community as a whole.

7. *Methods of affording Direct Assistance.*—We have considered various methods by which a direct grant might be given and the basis upon which it should be assessed, and have approached the problem as involving the transport by air of passengers, goods and mails.

The question of the payment of grants on the basis of the number of miles covered, or of the number of hours flown, has been discussed, and we have had before us details of the French scheme in operation which is based on this principle.

We have been forced to the conclusion that any such scheme of grants is fundamentally unsound, as the grants can be earned without any direct return to the State or community, either by way of experience gained, useful work performed, development of more efficient machines or establishment of regular air routes. We have, therefore, discarded the policy of giving grants on such a general basis.

We have also considered the advisability of making the payment of a grant dependent upon the carriage of a guaranteed load of mails within a fixed maximum time, but have found the practical application of such a system too difficult to warrant its adoption. This method has the further grave defect that it might often involve the State in the payment for certain services which might not, in fact, have been performed.

We have laid down, therefore, as a principle that any grant must be in return for useful work performed, such as the acceleration of mail transport, or for services productive of valuable experience.

We have considered whether these requirements could not be met by an arrangement under which the State set aside for carriage by air some or all of the mail matter on a specified route or routes and invite recognised firms to tender for the work on stated terms. This method is the one which we have already recommended for application to the Cairo-Karachi route.* After due consideration we have been compelled to decide against the extension of this method to the experimental services which we contemplate between this country and the Continent. The distance between London and Paris is too short and the saving in time insufficient to induce the General Post Office to dispense with existing mail services in favour of transport by air. We are advised that the mail contracts which would be of use to the Post Office would be for such routes as London to Rome, where the saving of a clear business day would be practicable. But on these routes we are faced with numerous difficulties. The weather conditions throughout the year are far more treacherous than on the Cairo-Karachi route, international questions are still complicated, and the development of air transport has scarcely attained such perfection as to make it possible to rely on the regularity in present conditions of such a service. We are consequently of opinion that any scheme for the assistance of civil aviation must permit of gradual development and consolidation stage by stage. Bearing in mind these two factors, namely, the difficulties in the way of the immediate inauguration of long-distance services and the present uneconomic position with regard to the carriage of mails over short distances, we have tried to devise a scheme which, while ensuring the utmost economy on the part of the Government, will assist those undertakings which, by the reliability of their service, by the public support that they are able to secure, and by their economic management prove themselves to be most worthy of financial assistance by the State.

8. *Scheme of temporary State Assistance recommended.*—The scheme which commends itself to us limits State financial assistance to a maximum sum agreed beforehand, and makes the amount of the individual grants to Transport Companies conditional on the regularity of the service and proportional to the actual amount of income received from the public using the service, *i.e.*, to the actual work done and useful experience gained.

Moreover, we feel strongly that the relationship between air transport companies and the General Post Office should be placed on a purely commercial basis, and that transport companies should begin dealing with the Post Office, when seeking mail contracts, on an equal footing with railway and steamer companies, thus avoiding the confusion of State assistance with payment for work done.

We believe that the basis upon which our recommendations are framed will assist in making this possible.

We, therefore, make the following recommendations :—

(1) That direct assistance should be given, limited to a maximum sum of 250,000£, within the two financial years 1920–21 and 1921–22, and that payments to companies operating on approved routes should be calculated on the basis of 25 per cent. of the total certified gross revenue of each company (exclusive of the Government grant) earned by the carriage of passengers, mails or goods.

No differentiation should be made with regard to the class of load carried, and the payments should be allotted on the return for each period of three

* Cmd. 449. "Report on Imperial Air Routes."

months treated separately, provided that the company can show that, on a minimum of 45 days in each period of three months (or such other factor of regularity as may be determined later by the Air Ministry), flights have been completed in both directions by aircraft of British manufacture and with British engines within an agreed maximum number of hours.

For the purpose of checking the revenue earned, it will be necessary for the company to submit to departmental inspection, when required, all the company's books, receipts and other documents in support of their claim.

A further condition of the grant should be that the details of the cost of maintaining and operating the service should be produced annually for inspection by the Government.

(2) That the "approved" routes should be:—

- (a) London to Paris and approved extensions therefrom.
- (b) London to Brussels and approved extensions therefrom.
- (c) An approved route, as, for instance, England-Scandinavia, on which the possibilities of a service employing flying boats or "amphibian" machines, or a mixed service of sea and land aircraft, can be demonstrated.

The maximum time allowed for journeys between London and Paris, and London and Brussels, should be four hours from aerodrome to aerodrome (or such other time limit as may be determined later by the Air Ministry); and the maximum time allowed for journeys on the extended routes should be proportionate.

(3) That any company intending to run on the routes and notifying the Air Ministry of this intention would become an "approved" organisation by fulfilling the conditions laid down as to regularity and speed of service.

(4) That a grant for an air service in this country should not at present be made. However, if satisfactory proposals are put forward for internal services, or for a service between Great Britain and Ireland, the extension of the principle of State assistance for this purpose may require further consideration at a later date.

19th April 1920.

WEIR (*Chairman*).
J. STEVENSON (*Vice-Chairman*).
L. BAIRSTOW.
SIDNEY A. BOULTON.
J. T. C. MOORE-BRABAZON.
INCHCAPE.
W. A. ROBINSON.
H. WHITE-SMITH.
F. H. SYKES.

F. G. L. BERTRAM (*Secretary*).

I sign the Report but consider that if the grant is limited to two years and is only payable on earnings it should not be limited to £250,000.

J. STEVENSON.

In signing the Report I endorse the rider put forward by Sir James Stevenson.
H. WHITE-SMITH.

I sign the Report, but in the present state of the country's finances I am not in favor of subsidising any aviation Company.

INCHCAPE.

Report by Air Marshal Sir Hugh M. Trenchard, Bart., K.C.B., D.S.O.

The Right Hon. WINSTON S. CHURCHILL, M.P.,
Secretary of State for Air.

1. Although I am in agreement with a large part of the Majority Report I regret I am unable to endorse the recommendations contained in paragraphs 6 and 8, for the following reasons :—

(a) The basic question at issue, namely, what is the precise object of keeping Civil Aviation alive, does not appear to have been adequately examined.

(b) It seems to me that the Committee too lightly brush aside the fundamental objections to the principle of subsidies, and the evil consequences arising from them.

(c) Sufficient consideration does not appear to have been given to the statement in the Terms of Reference that the Committee must bear in mind the need for the utmost economy.

(d) I am not satisfied at present that Civil Aviation, on the basis of the indirect assistance so far recommended, has failed, as paragraph 6 of the Majority Report implies. I do not think it has had time to prove its value.

2. With regard to (a) and (b), is Civil Aviation to be maintained for commercial purposes only? Or is it required to provide a reserve for Imperial Defence? Or again, is it necessary for both purposes?

If the reason is commercial, then I am of opinion that the policy of subsidies stands self-condemned. It is not a system on which the British Empire has built up any of its great industries, and its result may be compared with the artificial and weakly growth produced by a hot house as contrasted with the strong growth due to normal conditions. The only sound basis of any industry primarily designed to meet the needs of commerce is that it shall be self-supporting and forced to maintain itself in a profitable condition by good and economical organisation and administration. A Government grant inevitably tends to weaken this stimulus.

The Committee limit the payment of subsidies to a period of two years. This two years is a time when it is universally admitted that stringent economy by Government is necessary. But is it conceivable that any Government, once the subsidies have been granted, will be able to withdraw them, especially when the money situation will probably be less difficult? If this is so, we shall be committed indefinitely to a policy which is admittedly unsound.

If it is contended that Civil Aviation must be helped in order to provide a reserve for Imperial Defence, then my opinion is that no urgency at the present moment exists in view of the paramount necessity for stringent national economy. I submit that in the interests of economy the wisest policy is to build up Service Aviation for the present on what may be termed a policing basis, and to add at a later date what is necessary towards giving us the necessary powers of expansion in case of a big war.

I fully recognise, however, the necessity for the existence of a certain number of aircraft companies to cater for Service needs, but it must be remembered that, although Service Aviation is at present existing on machines which are the legacy of the late war, the number of machines which will be required in normal years in future will be considerable and in itself sufficient to maintain a healthy industry.

I am firmly convinced that the first essential in the case of Civil, as in that of Service, Aviation is to clear away the rank growth of war. The sooner this is done, and the industry reduced to dimensions commensurate with the demands, the sooner will Civil Aviation commence to grow and flourish. The longer the reduction is delayed by artificial means, the longer will a healthy growth, with its roots firmly fixed in the industries of the country, be retarded. The retention of designing staffs is a case in point. I recognise the importance of keeping the development of designs on progressive lines, but I do not think it is necessary to retain large designing staffs to ensure that this is done. The actual designers during the war were very few in number. It is their services which must be retained, and not necessarily those of their staffs, which consisted principally of engineering

draughtsmen and the like, who could all be replaced at short notice, but I consider that, in order to keep a certain number of small designing staffs in being, it would be preferable, in place of giving subsidies, to place more orders with selected companies for experimental machines.

3. Apart from the general objection to any system of subsidies, I doubt if they would fulfil their object. The failure of indirect assistance is admitted to be due to the fact of the small demand for the carriage of passengers, goods or mails. Unless this is due to any shortcomings in the services provided, which can be removed by direct subsidies, I fail to see how such subsidies will increase the demand in any way.

Doubts are expressed as to the possibility of commercially paying services between London and Paris and London and Brussels, and the recommendations for subsidies to the companies working these routes are based on the possibility of an extension of the services to Spain, Portugal, Italy, and the South of France. Is it certain, however, that we shall be allowed to carry mails in European countries?

4. In view of the insistence in the terms of reference on the need of economy, it appears to me that whether or not any system of direct assistance or subsidy be adopted, it is necessary to review afresh the policy hitherto recommended by the Committee. In this connection I would quote the following extract from a previous paper written by me :—

“When it was decided that it was necessary for the Government to help aviation, directly or indirectly, in order to keep it in being, it was agreed that the best assistance that could be given to Civil Aviation would be a certain number of Government landing grounds and accommodation which aerial transport companies could use, free meteorological information, and the assistance of Government wireless on the routes, the marking out of routes, the providing of lighthouses at certain stations, and the inspection and certifying of the airworthiness of machines free of charge, and a certain amount of other minor assistance instead of giving direct subsidies to companies for useful work done, or simply for flying.

“This policy has been carried out and grounds have been bought, sheds provided and routes marked out, but unfortunately it looks as if no aerial companies are likely to use to the full the facilities afforded, as apparently the assistance given has not been sufficient to enable companies to carry out useful work. This is partly due to the fact that the Post Office have not yet been able to give them useful mail contracts. Under these circumstances it seems doubtful policy to continue the expenditure of money on this indirect assistance on the scale previously proposed, when it appears that the assistance will not be utilised. In other words, aerodromes and sheds will be provided and no machines will use them for the purpose for which they were intended.”

5. My recommendations are as follows :—

(i) It is not advisable to give direct subsidies to aerial transport companies for work done, nor do I think the necessity has yet been shown for doing so.

(ii) It would be preferable to allot the money suggested for subsidies to design and research by placing more orders for experimental machines with certain approved companies.

(iii) If the subsidy is granted, then I am in agreement with the system of applying the subsidy suggested in the Majority Report in paragraph 8 (1).

H. TRENCHARD.

20th April 1920.

APPENDIX.

Brief Summary of the more important steps taken by the Air Ministry for the assistance of Civil Aviation.

1. *Administrative Organisation.* The Air Ministry has been in existence since April 1918. The Department of Civil Aviation was established on 1st April 1919.

2. *Co-ordination of the Meteorological Service under the Air Ministry.* The Headquarters of the Meteorological Office were transferred from South Kensington to the Air Ministry in November 1919, and all the Government Meteorological Agencies including the Marine, Statistical and Instruments Divisions, and the British Rainfall Organisation, are now co-ordinated under the Department of Civil Aviation which is responsible for the whole Meteorological Service of Great Britain. A new Meteorological Committee has been formed on which the Royal Society, the Admiralty, War Office, the Ministry of Agriculture and Fisheries, the Board of Trade and the Colonial Office continue to be represented.

3. *Research.* The assistance and experience of the Department of Supply and Research which is now under the Air Ministry is at the disposal of civil aviation firms.

An Aeronautical Research Committee has been appointed to assist in the advancement of Aeronautical Science.

4. *Adjustment of International Relations.* The International Air Convention, in which Great Britain took a leading part and on the provisions of which the British Air Navigation Regulations are mainly based, has been signed by the Allied and Associated Powers and the Dominions except the United States, Japan and Canada. The total number of States which have signed is twenty-nine.

Pending ratification of the Convention temporary agreements for communications by air have been concluded with Belgium, France, Italy and Portugal; and also with Holland and Switzerland.

Permission for individual flights has also been obtained from Denmark, Sweden, Norway, Finland and Spain.

5. *Legislation for the Control of Air Navigation in Great Britain.* An Air Navigation Act, 1919, was passed to make temporary provision for the regulation of Air Navigation and provisional Air Navigation Regulations came into force on 1st May 1919, and have been amended where necessary. The regulations provide, *inter alia*, for registration of aircraft, licensing of personnel, issue of certificates of airworthiness, rules for lights and signals and rules of the air, and instructions with regard to arrival of aircraft in and departure from the United Kingdom.

An Air Navigation Bill largely based on the recommendations of the Civil Aerial Transport Committee, will be introduced in the House of Commons this Session, in order to bring the International Air Convention into force.

A Sub-Committee of the Advisory Committee for Aeronautics has issued a report as to load factors to be used in the design of Civil Aircraft.

6. *Uniformity of Air Legislation throughout the Empire and Co-operation between Home, Dominion, and Colonial Governments.* Departments concerned have been notified of the necessity of all Dominion and Colonial legislation conforming to the Convention and as far as possible to the British Air Navigation Regulations.

Close relations are maintained between the Foreign Office, Colonial Office, India Office, and Air Ministry, whereby touch is kept with all Overseas development in civil aviation. Australia, Canada, and South Africa are represented by liaison officers at the Air Ministry.

A conference was held in September 1919 with representatives of the Dominion Meteorological Departments.

7. *Survey, &c. of Air Routes.* Considerable assistance has been given in connection with the London-Paris and London-Brussels routes which have been in operation by private enterprise since August 1919.

The route from Cairo to Cape Town has been surveyed and prepared by the State, and comprises twenty-four landing grounds and nineteen emergency landing grounds. Negotiations are now in progress between the Governments of South Africa and of the Colonies through which the route passes, the Colonial Office and the Treasury as to the future maintenance of these aerodromes.

The route from Cairo to Australia has also been surveyed.

On the Cairo-Karachi route, the recommendations of the Advisory Committee on Civil Aviation have been adopted and are being put into force; wireless and landline facilities have been improved; and the route is being prepared for a mail service.

Route directions, maps, charts and navigational information have been, and are, prepared and distributed to aviators undertaking pioneer flights. A number of aerodromes are available for civil aviation in India, and others are being prepared for this purpose.

The ban on Civil Aviation in India has been removed. The ban has also been removed in Egypt in specific cases.

The site for an aerodrome at Malta has been selected and experiments are being made to ascertain its suitability.

A special section of the Department of Civil Aviation has been formed for the purpose of mapping and marking routes.

An aerodrome book is ready for publication.

8. *Efficient ground organisation comprising:*

- (i) *Provision and organisation of aerodromes.*
- (ii) *Provision of wireless telegraphy and telephony facilities.*
- (iii) *Distribution of meteorological information.*
- (iv) *Distribution of general information.*

Private enterprise has been assisted by the provision of aerodromes, wireless, meteorological facilities and the issue of general information.

(i) The London terminal customs aerodrome at Hounslow was the first of its kind in the world. It has now been transferred to Croydon (Waddon) as Hounslow had to be returned to the War Office.

Lympne aerodrome (near Folkestone) has been established as a customs aerodrome on the coast for the further convenience of international traffic.

A portion of the seaplane station at Felixstowe has been taken over as a civil station for sea aircraft and customs facilities provided for traffic across the North Sea.

Negotiations are in progress with several Municipal Authorities for the establishment of municipal aerodromes near large centres of population in Great Britain.

Where the volume of traffic warrants the establishment of customs facilities at private aerodromes, the Board of Customs have agreed to provide such facilities under certain conditions. Messrs. Handley Page's aerodrome at Cricklewood is the first to have the advantage of this arrangement.

A number of emergency landing grounds have also been surveyed throughout the British Isles along probable future routes and negotiations are in progress with the owners.

Aerial lighthouses have been put in operation at certain points, and with the development of night flying will be increased in number.

Where civil aerodromes are established such as at Croydon and Lympne, a Civil Aviation Transport Officer is placed in charge, and with a small staff has the duty of maintaining the aerodromes and of assisting those using them.

(ii) Improvements have been made in the Air Ministry Wireless Station, and the terminal aerodrome at Croydon is being equipped with the most up-to-date W/T, radio-telephony, and directional finding apparatus.

The system of communications to the Continent is already providing a useful service, and is being steadily improved.

Arrangements have been made for the transmission and receipt by wireless of meteorological reports to and from neighbouring countries, and the organisation in Great Britain of a network of wireless stations for meteorological work continues.

Five stations in the United Kingdom have been fitted with radio-telephony apparatus. Proposals have been submitted for the institution of a uniform system of wave-lengths throughout the world.

The Air Ministry is represented on the Imperial Communications Committee.

(iii) A system of contributive and distributive meteorological stations has been devised to cover the United Kingdom, and a number of local centres have been established to contribute reports essential for aviation. In connection with the Air Services to the Continent a complete system of British weather reports for S.E. England has been inaugurated.

(iv) General information has been distributed relating to progress abroad, aerial routes, commercial enterprises, &c. Close touch has been maintained with aircraft firms and the Department of Research, and communiqués and notices have been issued to the Press.

9. *Licences.* Licences have been issued and periodically renewed for pilots, engineers, navigators and aerodromes; and certificates of registration and airworthiness for machines.

10. *Government Enquiry into Accidents.* The investigation of accidents is being carried out by a special section, and powers to make this investigation compulsory are being sought under the Air Navigation Bill.

11. *Establishment of Mail Services.* Since 10th November 1919 an Air Mail Service has been in operation between London and Paris. Tenders for an air mail service between England and Holland have been invited by the Post Office, and negotiations are proceeding for placing a contract for a service between London and Brussels on the lines already reached with Holland.

Discussions between the Air Ministry, the India Office, and the Treasury are still in progress with regard to the incidence of the cost and other details of the proposed Cairo-Karachi Mail Service.

12. *Development of Airships.* The Air Ministry has entered into negotiations with a syndicate for the commercial development of airships.

13. *Disposal of Service Aircraft and Material.* A number of machines have been presented to the Dominions and Colonies and will be available for the development of Civil Aviation in the countries concerned.